

**CLAIMS**

Please **CANCEL** claims 25-30 as follows:

A status of the claims is provided below.

Claim 1. (original) A method of fabricating a semiconductor structure, comprising the steps of:

forming a  $\text{Si}_{1-x}\text{Ge}_x$  layer on a substrate;

forming a plurality of channels in the  $\text{Si}_{1-x}\text{Ge}_x$  layer and the substrate;

removing a portion of the substrate underneath the  $\text{Si}_{1-x}\text{Ge}_x$  layer to form a void in the substrate; and

filling the channels and the void with a dielectric material.

Claim 2. (original) A method according to claim 1, wherein:

the substrate includes a first silicon layer, a second insulator layer and a third substrate layer;

the plurality of channels include at least a first channel and a second channel extending through the  $\text{Si}_{1-x}\text{Ge}_x$  layer to the bottom of the first silicon layer of the substrate; and

the void is formed in the first silicon layer of the substrate underneath the  $\text{Si}_{1-x}\text{Ge}_x$  layer extending from at least the first channel to the second channel.

Claim 3. (original) A method according to claim 1, wherein the step of removing a portion of the substrate underneath the  $Si_{1-x}Ge_x$  layer includes a step from the group consisting of:

etching the portion of the substrate underneath the  $Si_{1-x}Ge_x$  layer;

performing timed etching of the portion of the substrate underneath the  $Si_{1-x}Ge_x$  layer;

performing timed etching of the portion of the substrate underneath the  $Si_{1-x}Ge_x$  layer

using an etchant that exhibits a higher etch rate for the substrate than for  $Si_{1-x}Ge_x$ ;

performing timed etching of the portion of the substrate underneath the  $Si_{1-x}Ge_x$  layer

using an etchant from the group consisting of ammonia, tetramethyl ammonium hydroxide,

nitric acid and hydrofluoric acid.

Claim 4. (original) A method according to claim 3, wherein the  $Si_{1-x}Ge_x$  layer has a bottom surface and a top surface, and the bottom surface is more resistant to etching than the top surface.

Claim 5. (original) A method according to claim 4, wherein the  $Si_{1-x}Ge_x$  layer has a higher concentration of Ge at the bottom surface than at the top surface.

Claim 6. (original) A method according to claim 2, wherein the step of removing a portion of the substrate underneath the  $Si_{1-x}Ge_x$  layer to form a void in the first silicon layer of the substrate from the first channel to the second channel produces a relaxed portion of the  $Si_{1-x}Ge_x$  layer above the void.

Claim 7. (original) A method according to claim 1, further comprising a step of annealing the  $\text{Si}_{1-x}\text{Ge}_x$  layer after the void is formed in the first silicon layer.

Claim 8. (original) A method according to claim 1, wherein the step of forming the  $\text{Si}_{1-x}\text{Ge}_x$  layer includes a step from the group consisting of:

- ultrahigh vacuum chemical vapor deposition (UHVCVD);
- rapid thermal chemical vapor deposition (RTCVD);
- low-pressure chemical vapor deposition (LPCVD);
- limited reaction processing CVD (LRPCVD); and
- molecular beam epitaxy (MBE).

Claim 9. (original) A method according to claim 1, further comprising a step of forming a cap layer atop the  $\text{Si}_{1-x}\text{Ge}_x$  layer.

Claim 10. (original) A method according to claim 9, further comprising steps of:  
removing the cap layer; and  
forming a strained semiconductor layer on the  $\text{Si}_{1-x}\text{Ge}_x$  layer.

Claim 11. (original) A method according to claim 1, further comprising a step of thickening the  $\text{Si}_{1-x}\text{Ge}_x$  layer by forming a second  $\text{Si}_{1-x}\text{Ge}_x$  layer on the first  $\text{Si}_{1-x}\text{Ge}_x$  layer.

Claim 12. (original) A method according to claim 1, further comprising a step of forming a strained semiconductor layer on the  $\text{Si}_{1-x}\text{Ge}_x$  layer.

Claim 13. (original) A method according to claim 12, wherein the step of forming the strained semiconductor layer is a step from the group consisting of:

- ultrahigh vacuum chemical vapor deposition (UHVCVD);
- rapid thermal chemical vapor deposition (RTCVD);
- low-pressure chemical vapor deposition (LPCVD)
- limited reaction processing CVD (LRPCVD); and
- molecular beam epitaxy (MBE).

Claim 14. (original) A method according to claim 12, wherein the strained semiconductor layer is comprised of a semiconductor from the group consisting of Si and  $\text{Si}_{1-y}\text{C}_y$ .

Claim 15. (original) A method according to claim 12, further comprising a step of forming a device on the semiconductor structure between the first and second channels as filled with dielectric material, and above the void as filled with dielectric material.

Claim 16. (original) A method of fabricating a semiconductor structure, comprising steps of:

forming a  $\text{Si}_{1-x}\text{Ge}_x$  layer on a silicon-on-insulator substrate having a first silicon layer, a second  $\text{SiO}_2$  layer and a third substrate layer;

forming a first channel and a second channel, each channel extending through the  $\text{Si}_{1-x}\text{Ge}_x$  layer to the bottom of the first silicon layer of the substrate, the first channel and second channel being substantially parallel;

removing a portion of silicon layer under the  $\text{Si}_{1-x}\text{Ge}_x$  layer to form a void in the first silicon layer of the substrate from the first channel to the second channel;

filling the first and second channels and the void with a dielectric material; and

forming a strained semiconductor layer on the  $\text{Si}_{1-x}\text{Ge}_x$  layer.

Claim 17. (original) A method according to claim 16, further comprising a step of thermal annealing the  $\text{Si}_{1-x}\text{Ge}_x$  layer after the void is formed in the first silicon layer and before the first and second channels and the void are filled with dielectric material.

Claim 18. (original) A method according to claim 16, further comprising a step of planarization after filling the first and second channels and the void with a dielectric material.

Claim 19. (original) A method according to claim 16, wherein the step of forming the  $\text{Si}_{1-x}\text{Ge}_x$  layer is a step from the group consisting of:

ultrahigh vacuum chemical vapor deposition (UHVCVD);

rapid thermal chemical vapor deposition (RTCVD);

low-pressure chemical vapor deposition (LPCVD);

limited reaction processing CVD (LRPCVD); and  
molecular beam epitaxy (MBE).

Claim 20. (original) A method according to claim 16, wherein the step of forming the strained semiconductor layer is a step from the group consisting of:

ultrahigh vacuum chemical vapor deposition (UHVCVD);  
rapid thermal chemical vapor deposition (RTCVD);  
low-pressure chemical vapor deposition (LPCVD);  
limited reaction processing CVD (LRPCVD); and  
molecular beam epitaxy (MBE).

Claim 21. (original) A method according to claim 16, further comprising a step of forming a cap layer atop the  $\text{Si}_{1-x}\text{Ge}_x$  layer.

Claim 22. (original) A Method according to claim 21, further comprising steps of:  
removing the cap layer; and  
forming a strained semiconductor layer on the  $\text{Si}_{1-x}\text{Ge}_x$  layer.

Claim 23. (original) A method according to claim 16, wherein the step of forming a strained semiconductor layer includes a step from the group consisting of:

epitaxially growing a strained Si layer; and

epitaxially growing a strained  $\text{Si}_{1-y}\text{C}_y$  layer.

Claim 24. (original) A method according to claim 23, further comprising a step of thickening the  $\text{Si}_{1-x}\text{Ge}_x$  layer by forming a second  $\text{Si}_{1-x}\text{Ge}_x$  layer on the first  $\text{Si}_{1-x}\text{Ge}_x$  layer.